Robotics lab 3 report.

I wrote a divide function which divides the original image into the three individual color channels by selecting specific rows(; basically slicing matrices in octave)

Image alignment using ssd

-For the first part I used a 271\*271 blue template centred around the middle pixel of the blue channel and measured similarities using the ssd metric with the green and red channels.

- I slid this window around the green and red channels using loops over all displacements in the range [-15,15]

-I found the point with max similarity in the channels wrt the blue channel and calculated its displacement from the centre of the blue channel.

- I then used circshift with the displacements given as a vector

Eg: circshift(g,disp), here disp is a vector which gives the displacement of the channel from teh blue channel.

-Then I used the concatenate command on the the blue channel and the shifted green and red channels and wrote them to their respective files.

For image 1 displacements of green and red channels along x,y are resp-

disp\_g =

6 2

disp\_r =

12 1

For image 2 displacements of green and red channels along x,y are resp-

disp\_g =

5.0000 2.5000

disp\_r =

11.0000 2.5000

For image 3 displacements of green and red channels along x,y are resp-

disp\_g =

8 6

disp\_r =

16 9

For image 4 displacements of green and red channels along x,y are resp-

disp\_g =

5 3

disp\_r =

15 3

For image 5 displacements of green and red channels along x,y are resp-

disp\_g =

6.0000 3.5000

disp\_r =

13.0000 4.5000

For image 6 displacements of green and red channels along x,y are resp-

disp\_g =

1.0000 2.5000

disp\_r =

7.0000 3.5000

##The decimal is due to a typecasting issue, I floor() it in my displacement calculations.

Alignment using NCC,

* I took a template of size 185\*185 centred around the middle element of the blue channel of an image .
* I slid this template over the green and red channels over displacements in the range [-15,15] from the centre of the other 2 channels along the x and y axes and found the displacement which gives maximum ncc.
* Then I gave the displacement vector as input to circshift() and shifted the red and green channels.
* Afterwards I used the concatenate command and merged the channels and wrote the images to their respective files

For image 1 displacements of green and red channels along x,y are resp-

disp\_g =

7 2

disp\_r =

12 1

For image 2 displacements of green and red channels along x,y are resp-

disp\_g =

5.0000 2.5000

disp\_r =

11.0000 2.5000

For image 3 displacements of green and red channels along x,y are resp-

disp\_g =

8 6

disp\_r =

16 -12

For image 4 displacements of green and red channels along x,y are resp-

disp\_g =

16 17

disp\_r =

15 3

For image 5 displacements of green and red channels along x,y are resp-

disp\_g =

7.0000 2.5000

disp\_r =

13.0000 4.5000

For image 6 displacements of green and red channels along x,y are resp-

disp\_g =

1.0000 2.5000

disp\_r =

7.0000 3.5000